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Actions for the further implementation of the Programme of Action of the International Conference on Population and Development

Programmes and innovations to strengthen the demographic evidence base for the implementation of the Programme of Action of the International Conference on Population and Development and the 2030 Agenda for Sustainable Development

Report of the Secretary-General

Summary

The 2030 Agenda for Sustainable Development is based on the assumption that every country is able to identify and locate the vulnerable, identify interventions that result in the greatest improvements in their welfare and monitor equality of progress over a wide array of goals and targets. People are at the centre of those aims, which echo recommendations of the Programme of Action of the International Conference on Population and Development (1994), the Key actions for the further implementation of the Programme of Action (1999) and the Framework of actions for the follow-up to the Programme of Action beyond 2014 (2014). Each of these characterizes a vision of sustainable development based on the achievement of universal human rights and equality, sexual and reproductive health, gender equality and the empowerment of women, education, security of place, economic growth and the dignity of all persons.

Many developing countries, however, cannot redress population inequalities because they lack core demographic data and their data systems are underdeveloped and/or heavily oriented to data production, with inadequate attention to the use of data for national planning and monitoring progress in sustainable development.

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The coming push for a data revolution will be successful if it ensures strong national data ecosystems within each country, with institutional capacity to use and integrate diverse types and sources of population data, including better administrative data on health, education, transport, energy and the many sectors essential for development. To achieve those aims, countries will need to raise the political priority of establishing national statistical systems to implement and monitor the agendas of the International Conference on Population and Development and the Sustainable Development Goals; prioritize the long-term growth of institutions, including a new generation of population experts; and develop strategies for data collection, especially for the 2020 census round, that are embedded within efforts to improve the use of such data by Governments and civil society to advance human rights and equality.

The present report, prepared by the United Nations Population Fund, identifies key shortfalls in national population data ecosystems that need to be addressed in order for countries to fulfil the aspirations of the 2030 Agenda and the Programme of Action of the International Conference on Population and Development; highlights programmes supporting innovative ways to generate and use population data for development in a wide range of countries; and identifies promising investments to strengthen data for development planning, implementation and reporting.

I. Introduction

1. Evidence-based decision-making is a universally recognized foundation of good governance and the overall efficient management of social and economic affairs. Relevant, accurate and timely population data are a sine qua non of such decision-making, enabling Governments to anticipate public needs, determine the impact of public policies and confirm the pace of progress.

2. The transformative demand of the 2030 Agenda for Sustainable Development is that every country will be able to identify and locate the vulnerable, identify interventions that result in the greatest improvements in their welfare, and monitor progress over the wide array of Sustainable Development Goals and targets. This demand for the disaggregation and use of population data for planning, evaluation and the monitoring of progress presents a serious challenge, given the number of countries that still lack core sources of population data[1] and have long-standing weaknesses in their data ecosystems.

3. The emphasis on population data for sustainable development echoes recommendations of the Programme of Action of the International Conference on Population and Development (1994), the Key actions for the further implementation of the Programme of Action (1999) and the Framework of actions for the follow-up to the Programme of Action beyond 2014,[2] which included an extensive evidence-based assessment of progress across the substantive range of the Programme of Action. A valuable product of the 2014 review was insight into key vulnerable populations whose human rights had been neglected and inequalities in population health, particularly in sexual and reproductive health, that had persisted or worsened since the 1990s. Such inequalities were masked by the national aggregate reporting required for the monitoring of the Millennium Development Goals, allowing subnational and other important population inequalities to fall below the radar of national monitoring systems.

4. Addressing these gaps and achieving evidence-based sustainable development will require more than periodic data collection through the census and household surveys; it will require accelerated progress towards the integration of real-time civil registration and administrative data in all major sectors (for example, health and education); assurances that census and survey data will be georeferenced and widely accessible; and greater investments in order to collect critical data on mobile and disenfranchised populations. Perhaps most importantly, it will require redressing the glaring weakness in many national systems for the analysis of data and production of results, and the translation of those results into the national planning and monitoring of investments.

5. The present report identifies key shortfalls in national population data ecosystems that need to be addressed in order for countries to fulfil the aspirations of the 2030 Agenda and the Programme of Action of the International Conference on Population and Development and its review outcomes; highlights innovative programmes that support the generation and use of population data in a wide range of countries; and identifies promising investments to strengthen demographic data for the fulfilment of the Programme of Action and the 2030 Agenda.

[1] For a review of national capacity, see E/CN.9/2016/3.
[2] See A/69/62.

II. Challenges of strengthening population data for the implementation of the Programme of Action of the International Conference on Population and Development and the 2030 Agenda for Sustainable Development

6. During the broad public debates on the indicators for the Sustainable Development Goals in the course of 2015, two key points emerged regarding statistical capacity-building for the 2030 Agenda. First, more holistic approaches to building national statistical capacity will be essential to ensure that institutions have the flexibility and capacity to integrate data from different sources. Second, while the necessary focus on indicators during 2015 concentrated on monitoring and reporting, more efficient and strategic national and local use of population and related data for planning and implementation — with reporting as a by-product — is of primary importance.

7. Notwithstanding the increasing awareness of the need for a major expansion in strategic and routine use of population data, current approaches in many developing countries are oriented heavily around the production and processing of data. Many national statistical offices have a limited mandate in respect of the analysis and use of data beyond the production of thematic reports on the census or the demographic and health or multiple indicator cluster surveys, creating an institutional firewall between data producers and users. On the other side of this firewall, the capacity of local planners, academics, independent analysts and public activists to analyse and use population data is often very limited.

8. Within the focus on data production, there is a high degree of specialization between data types, namely, censuses, household surveys, civil registration and vital statistics, and other administrative data. This specialization diminishes the likelihood of strong integration between data types, which is essential for integrated development analysis. It also has major spillover effects on the sustainability of skilled human resources. In particular, the size of the census operation requires massive, expensive expansion of capacity during census-taking, often relying on short-term consultants and interviewers; the implementation of the demographic and health survey or the multiple indicator cluster survey requires a parallel periodic expansion, albeit to a lesser degree. Too often, internationally driven systems for the generation of data, concluding with the production of a single summary report, offer little institutional strengthening, which is needed to create a vibrant knowledge society, and those that do are often not matched by corresponding government investments.

9. Critical attention needs to be paid to these gaps in national capacity if the fulfilment of the 2030 Agenda is to result in a true acceleration of resilient national data ecosystems. Key challenges in the use of data across the pillars of national population data systems, namely, census and registration systems complemented by surveys and other relevant data, are assessed in the next section.

A. Counting the world: population and housing census

10. On 10 June 2015, the Economic and Social Council adopted resolution 2015/10 on the 2020 World Population and Housing Census Programme. The

Council urged Member States to conduct at least one population and housing census during the period from 2015 to 2024 and underscored the need for countries to set quality standards. The United Nations Population Fund (UNFPA) was a key supporter of the 2010 round of censuses, partnering with the United Nations Statistics Division and multilateral partners.

11. During the 2010 census round, UNFPA contributed technical and/or financial support to censuses in more than 135 countries, including 122 developing countries.[3] In most cases, this support was carried out in partnership with other United Nations agencies, drawing on the Statistics Division guidelines on census operations. Support ranged from resource mobilization to planning; data collection and processing; analysis, including generating population projections; and dissemination. United Nations and donor support was pivotal in many countries, and a substantial number of countries continue to need both fiscal and technical support for their census. The number of countries fully funding their census nevertheless increased over the prior round.

12. An independent evaluation undertaken in 2014 to assess the role of UNFPA in the 2010 census round suggests valuable lessons regarding not only the contributions of UNFPA, but also the overall gaps and shortfalls in national census programmes.[4] Preliminary findings indicate that notwithstanding improvements in the public sharing of census data in many countries, an uptick in the use of census data by national Governments, academics and civil society organizations has not materialized. Strong support for the generation of census data has not been matched by capacity strengthening for the national and local use of the census for the analysis of population trends or development indicators. Even their use as a planning tool for public infrastructure remains underrealized in many countries. While the dissemination of census results improved in 2010 over the 2000 round (for example, with more summaries of simple census tabulations posted online),[2] most developing countries still lack public websites that provide an analysis of the census results. As the three largest donors strengthening statistical capacity in the developing countries, the European Commission, the World Bank and UNFPA were largely recognized for their support for the implementation of the census, but support for building national data institutions lags behind other dimensions of development aid.

13. In itself, the 10-year gap between censuses generates a challenge for capacity development, given that substantial funds and manpower are often mobilized to generate the census — admittedly an expensive national operation — but dissipate quickly thereafter. The preliminary findings of the evaluation suggest a gap between the support given to countries for the generation of the census and what is actually needed to ensure that the resulting data truly add value to national planning and evaluation. Much more focus by development partners and national Governments is necessary to enhance the training and capacity of both Governments and the public to use census and related demographic data for national development.

[3] The other 13 countries were Eastern European countries with economies in transition.

[4] Findings of the United Nations Population Fund (UNFPA) 2010 census evaluation will be *publicly available in June 2016.*

B. Civil registration and vital statistics

14. Ideally, a periodic census is complemented by a robust civil registration and vital statistics system that generates data on births, deaths and marriages as they occur, allowing routine annual national and subnational tabulations. The adoption of target 16.9 of the Sustainable Development Goals affirms that birth registration is critical to achieving legal identity for all people and a necessary precondition of human rights and inclusive and just societies,[5] and the existing gaps in civil registration and vital statistics systems have serious repercussions for development prospects. Yet, because the maintenance of such systems requires the continuous functioning of sectoral information systems as well as public trust, only 137 countries have 90 per cent or more coverage of birth registration; only 126 have 90 per cent or more coverage of death registration; and even fewer have complete coverage of cause of death or marriage registration.[6] In the least developed countries, only about a third of births are registered, notwithstanding a 30 per cent increase since 2000. Only 39 per cent of births in South Asia and 44 per cent of births in sub-Saharan Africa are registered, with rates of less than 10 per cent in Ethiopia, Liberia and Somalia.[2] Rural and poor households are typically the least able to register births, meaning that those most in need of development interventions are the least likely to be counted.

15. Countries need information on births and deaths in order to confer and guarantee citizenship and to plan nearly all aspects of public infrastructure development and social service provision, including health-care and education services. At the individual level, the right to be counted is fundamental to social inclusion,[7] and civil registration provides legal documentation essential to protecting citizenship, property and other economic, social and human rights.[8] Birth registration has direct implications for the provision of schools, as children are born and enter school at intervals far shorter than a 10-year inter-census period, and death registration is often a requirement for burial, remarriage or the resolution of criminal cases.[7] Birth certificates may be required for a child to access essential health-care systems or enrol in school and to establish family identity, which can be particularly important in times of crisis.[9]

16. Civil registration and vital statistics systems are also a cornerstone of a well-functioning health system, ensuring that countries can plan effective public health policies, measure the impact of health programmes, and proactively respond to epidemics and halt the spread of disease. Vital statistics enable the estimation of vaccine and child health-care coverage and, in the case of maternal mortality, both birth and death registrations are needed for surviving children to receive social protection services. Progress on the coverage of death registration is even less

[5] Target 16.9 of the Sustainable Development Goals (By 2030, provide legal identity for all, including birth registration) is recognized as necessary for the fulfilment of Goal 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels).

[6] See United Nations Statistics Division, Coverage of Birth and Death Registration, available from http://unstats.un.org/unsd/demographic/CRVS/CR_coverage.htm.

[7] See http://www.who.int/mediacentre/factsheets/fs324/en/.

[8] See http://blogs.worldbank.org/developmenttalk/why-civil-registration-matters-in-the-countdown-to-the-millennium-development-goals.

[9] See http://ma4health.hsaccess.org/docs/support-documents/crvs-6-4-15-web.pdf?sfvrsn=2.

advanced than for birth registration, yet death registration by age, sex and cause is critical for informing Governments about the changing burden and severity of disease, including the population or spatial distribution of illness and disability.

17. Programmes designed to expand opportunities for birth registration suggest that there is greater latent demand for birth registration than for death registration; the greater challenge is to ensure opportunity and develop an efficient and sustainable public record system. The expansion of death registration is more difficult, given that death registration must overcome public uncertainty about the value of such reporting, many deaths occur outside clinical facilities and, even when deaths are attended by health-care staff, the cause of death has inherent problems of misclassification, with some causes underreported owing to potential stigma.

18. Notwithstanding the obstacles to marriage and divorce registration, it is generally agreed that marriage and divorce registration play important protective functions in terms of ensuring that matrimonial property and individual rights are protected. Marriage registration and the corresponding statistics have the potential to identify critical human rights violations such as child marriage (for which birth registration for age identification is also necessary) and forced marriage, thus protecting girls and women. In sub-Saharan Africa, for example, the registration level for marriage and divorce is dismal. Only a fraction of marriages in sub-Saharan Africa are registered and an even smaller proportion of divorces are captured within the civil registration and vital statistics system. Low registration coupled with high numbers of consensual unions result in low crude marriage rates in Eastern and Southern Africa, with South Africa, for example, registering a crude marriage rate of 3.5 per 1,000 people and a crude divorce rate of 0.6 per 1,000 people.

19. In Europe, even after civil registration moved from the churches to a civic (secular) system, it took many countries two centuries to reach universal coverage. Today, the widespread availability of technology and technical guidelines can allow countries to increase civil registration and vital statistics coverage with unprecedented rapidity.[10] The national level of wealth is not necessarily a hindrance. For example, both Senegal and Madagascar have been forerunners of civil registration and vital statistics coverage and South Africa has increased the coverage of birth and death registration to 95 per cent over the past 20 years.[11]

C. National administrative data

20. Many countries have national registration systems that extend far beyond health or vital events, including national registries on residential status, public school enrolment, tax data and more. A number of countries, including Austria, Denmark, Finland, Iceland, Norway and Sweden, use individual identification numbers for each citizen to integrate population registries and administrative

[10] The Civil Registration and Vital Statistics Digitization Guidebook, for example, is an integral part of the civil registration and vital statistics strengthening support offered to African countries by the African Programme on Accelerated Improvement of Civil Registration and Vital Statistics. It is available from http://www.crvs-dgb.org/fr/ for Francophone countries and http://www.crvs-dgb.org/en/ for English-speaking countries.

[11] See Pierre Cantrelle and Michel Garenne (2015), "L'Etat civil en Afrique sub-saharienne: Historique d'un malentendu et espoirs pour l'avenir". Paper prepared for the seventh African Population Conference, 30 November-4 December 2015, Pretoria, South Africa.

databases and even use them to produce national census-like data.[12] Other European countries supplement the registries with survey data or pre-populate census questionnaires with registry data for confirmation. Denmark, a forerunner in the expanded use of national administrative data, is leading an effort to mentor other countries interested in evolving their national data registries.

21. Ecuador is the first country in Latin America proposing to migrate from the traditional census to a register-based census. To accomplish this, Ecuador has prioritized the strengthening of its civil registration and vital statistics system, as well as the enhancement of administrative records. For 2020, the country will undertake a combined exercise of a traditional census and a counting process based on civil registration and vital statistics and administrative public records; this is intended to evaluate the coverage of administrative records and establish the baseline of a future census system based on such records.

22. The cost-saving and sector-strengthening potential of such extensive civil registration systems are offset by the requirement that each sectoral data system (for example, health or education) be strong in and of itself. The use of individual identifiers that archive wide-scale personal data requires that Governments ensure the confidentiality of public records and that there be public trust in government.

23. Even where such systems are not comprehensive or fully integrated, registry data can provide enormous value when a census cannot be conducted. Ukraine did not conduct a census during the 2010 round and the previous national population census took place in 2001. National population statistics in the intercensal period were based on vital registration and limited data on registered migrants. Statistical reporting in the country has, however, been disrupted since 2014. Conflict and other crises that affect the administrative control of territories or lead to population displacement affect the quality of population data and, in turn, compromise planning processes in all sectors and at all levels, including humanitarian response.

24. At the request of the Council for National Security and Defence of Ukraine and the Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, UNFPA provided technical support for a population assessment exercise to validate the available population information sources, including the administrative databases of various governmental agencies, and built a population estimation model, based on the available data, for estimating overall population numbers and sex/age structure at the national and provincial (*oblast*) levels. Not all administrative databases containing valuable population information could be accessed at the time but, in 2016, population figures will be modelled using this methodology.

25. Such examples illustrate the substantial advantages for countries with multiple sources of population data, as well as the institutional capacity for inferential use of data from diverse sources. While such comprehensiveness and expertise represent a high standard to achieve, they lead to resilient population data systems, enabling countries to endure interruptions in data generation through model-based estimations.

26. Of all the administrative data, health-related data are among the most critical to the achievement of universal access to sexual and reproductive health and rights

[12] See E/CN.9/2016/3.

and to fulfilling the Programme of Action of the International Conference on Population and Development. The persistent weakness in health information systems in many countries has a direct impact on the capacity of health systems to respond to public needs. Death registration by cause of death is only one aspect of the data needs for strengthening health information; comprehensive health management information systems include routine and reliable data on case-reporting, health statistics, caseload and occupancy rates, stocks and flows, health worker competence and coverage, and quality of care. Countries where the quality of health information is especially weak are the same countries where the burden of preventable illness is most acute.

D. Population and household surveys

27. To accommodate the limited reliable population and health data available from civil registration and vital statistics and other national registries, and even the population counts from missing census data, household surveys such as the demographic and health survey and the multiple indicator cluster survey have become a critical source for monitoring progress in aspects of sexual and reproductive health and rights, and the status of women and girls, which are of central priority in the Programme of Action of the International Conference on Population and Development. While the World Fertility Survey, the forerunner of the demographic and health survey, was initially conceived as a stop-gap measure to collect data on births, family planning and maternal and child health until corresponding national health sector and population data systems evolved, these surveys continue to be the most reliable source of data for monitoring sexual and reproductive health outcomes and behaviours in many developing countries and will remain a critical source for reliable and comparable monitoring of many Sustainable Development Goal indicators.

28. Despite the importance of the demographic and health survey and the multiple indicator cluster survey in today's data ecosystem, the global dependence on these surveys underscores some limitations. According to a recent analysis by the Brookings Institution,[13] 39 low-income and lower-middle-income countries with a total population of 1.9 billion do not conduct health surveys at least every five years. The financial gap needed to achieve this benchmark for all developing countries is quite small compared with global data investments, suggesting that other factors, including capacity and national ownership, are more critical drivers.

29. Further, household surveys do not capture highly mobile populations well, including those displaced by crises, internal and international migrants, internally displaced persons and refugees, and do not provide information on populations outside of households, such as homeless populations and people living in collective housing such as schools or factories. Sampling limitations mean that surveys are often only representative at the regional level; this can limit the utility of surveys in settings where there is high inequality in concentrated spaces. The need to maintain continuity and a focus on women of reproductive age has meant that valuable data on young people below the age of 15 and adults above the age of 49 are missing in countries that lack sources of data other than the demographic and health survey and

[13] Laurence Chandy and Christine Zhang "Stuffing the data gaps with dollars: What will it cost to close the data deficit in poor countries?" (Brookings Institution, 31 August 2015).

the multiple indicator cluster survey. Nevertheless, the 2030 Agenda proposes to track the needs of the young and the old through the disaggregation of many variables across the Sustainable Development Goals. In countries that rely heavily on the demographic and health survey or the multiple indicator cluster survey, data gaps for young and older persons will need to be accommodated by new surveys or innovations and adaptation of existing sources.

30. The expansion of household surveys on older persons in many regions will be critical.[12] Although they are already widely used in the developed countries, such surveys have gained traction in Asia and are expanding into Africa, but they require far greater support. For select indicators for the Sustainable Development Goals, for example, in the domain of violence towards older persons, new dedicated global surveys will be needed and are currently under discussion at several United Nations agencies.

31. Regarding data on adolescents and young people, few global household surveys collect data directly from young people in this age group; yet, their health and development needs are pivotal to the long-term success of countries, especially those currently facing a youth bulge and attempting to harness a demographic dividend. Indicators for target 3.7 of the Sustainable Development Goals, for example, include the adolescent birth rate among girls aged 10 to 14. While such data can be estimated retrospectively from older women in the demographic and health survey or the multiple indicator cluster survey, Uganda has recently decided to adapt the Uganda AIDS Indicator Survey (a variant of the demographic and health survey that is operated in many HIV-affected countries), which already collects data on girls aged 10 to 14 years, to include direct questions on pregnancies and births. An expansion of the demographic and health survey or the multiple indicator cluster survey to include routine data for 10- to 14-year-olds would ensure standardization across the widest possible number of countries.

III. Opportunities and challenges of the 2030 Agenda for Sustainable Development: innovations in the generation and use of population data

32. The 2030 Agenda for Sustainable Development, which advances the aspiration that no one will be left behind, will be constrained if Member States are unable to identify and locate the most vulnerable people through available sources of data. While censuses can provide fine levels of disaggregation, they are generated infrequently; the majority of household surveys are limited in their geographic disaggregation and population coverage; real-time registry data remain limited in most developing countries; and while big data sources provide data in (near) real-time, they offer little or no demographic certainty. Triangulation and the ability to integrate multiple types of data are therefore essential to address subnational inequalities and ensure the rights and capabilities of all persons.

33. The call for a data revolution[14] recognizes this fact, focusing on the integration of existing and routinely gathered data and building resilient national institutions for

[14] "A World That Counts: Mobilizing the Data Revolution for Sustainable Development", report of the Secretary-General's Independent Expert Advisory Group on a Data Revolution for Sustainable Development, November 2014.

generating knowledge in all countries. The coming push for statistical capacity-building will be successful if it results in an integrated national data ecosystem within each country, wherein:

(a) Core demographic sources of data, namely, a georeferenced census, civil registration and vital statistics and national sector registries, provide a foundation for national planning, supplemented by periodic surveys and innovative new sources;

(b) New approaches to data integration and modelling are standardized and widely accessible, in particular to fill gaps or respond to interruptions or crises in a rapid, cost-efficient manner;

(c) Data are accessible to all members of society and used by strong, diverse institutions — both public and private — with strong national ownership, in order to advance development.

34. At the heart of the 2030 Agenda is the interaction between multiple dimensions of sustainable development and the recognition that determinants of inequality are often compounded across simultaneous social, environmental, economic and spatial exclusion. Diagnosing and responding to the complex determinants of inequality require the flexible and integrated talents of nationally based experts, in strong research institutions, who can work with population data from multiple sources, generate sound and needed analyses for and within their own countries, and partner with regional and global initiatives for data-sharing and innovation. The following examples cover a range of approaches to population data use that address complex needs and leverage the power of integrated analytic approaches to further the goals of the International Conference on Population and Development and the Sustainable Development Goals.

A. Data integration for the demographic dividend

35. In the past decade, there has been growing interest among Governments in the importance of population age structure for social and economic development, including ageing and the development potential of a demographic dividend. The demographic dividend is increasingly recognized by national Governments and the international community as a valuable framework that illustrates the linkages among rights-based human capital development, women's empowerment and sexual and reproductive health and economic growth. The window of opportunity is now open for many emerging economies in Africa and Asia to harness the potential benefits of a demographic dividend.

36. In 2015, UNFPA deepened investment in policy analysis, thought leadership and advocacy with government leaders in order to highlight the potential of the demographic dividend. After several years of preparation, the World Bank-funded and UNFPA-managed Sahel Women's Empowerment and Demographic Dividend project was launched in 2015 to advance the demographic dividend in six countries of the Sahel region. In the course of 2015, UNFPA supported national demographic dividend analyses with partners from the African Institute for Economic Development and Planning in Botswana, Burundi, the Democratic Republic of the Congo, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, Uganda, the United Republic of Tanzania and Zambia. UNFPA provided technical and fiscal

support to model the prospects for a demographic transition and a demographic dividend in each country, using DemDIV and national transfer accounts.

37. National transfer accounts integrate household surveys, population projections and national economic data to disaggregate the specific contributions of population dynamics to economic growth, subject to economic constraints such as the labour participation rate and the productivity of newcomers to the labour market. This type of analysis allows Governments to model the intergenerational transfers between dependent and non-dependent populations over time, allowing tighter planning for fiscal and social policies, modelling of the differentiated effects of inequality, and a gender division of work.

38. The integrated use of demographic and economic analysis to illustrate the potential for a demographic dividend has led to clear changes in public policy, in directions that further the goals of the International Conference on Population and Development. The attention to the demographic dividend has led many Governments to recognize the development potential of current demographic trajectories and the urgency of better schooling and expanded job opportunities and to make new commitments in family planning, youth programmes, employment and entrepreneurship.

39. A case in point is the political commitment and policy directions adopted by the Government of Zambia following a national study on the demographic dividend. UNFPA supported the Government in conducting the study and has created inroads for further strategic engagements by relevant public and private sectors, as well as civil society and development partners, on the integration of population variables into national development planning. Signed by the President of Zambia, the study findings and policy options served as inputs to a number of national position papers and statements, including the presidential statements and session on the demographic dividend at the seventieth session of the General Assembly. The study has been endorsed by the Cabinet of Ministers as a key resource to guide the seventh National Development Plan (2017-2021), which will also capture Zambia's domestication of the Sustainable Development Goals.

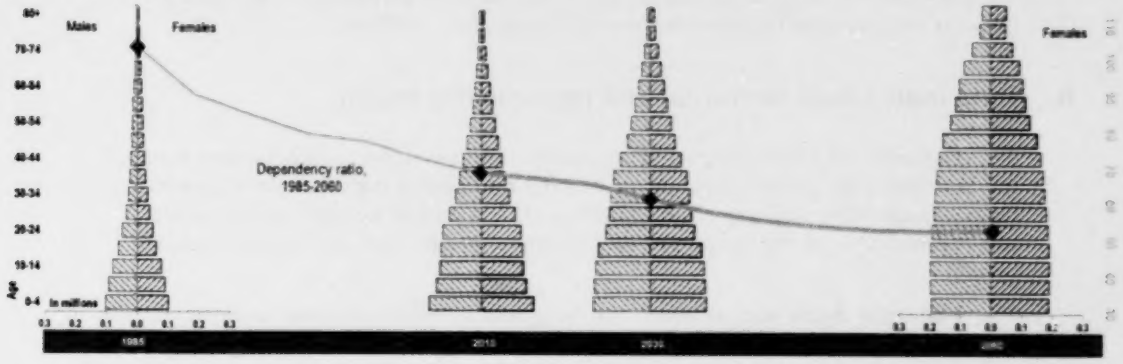
40. In Uganda, following the demographic dividend study carried out by the National Planning Authority, President Museveni launched the resulting report during a family planning conference and, for the first time, publicly pronounced support for family planning. In Kenya, the National Youth Service has reinforced the Government's commitment to ensuring that young people in Kenya have access to education and training, that they are protected from harmful practices such as child marriage and female genital mutilation and that they have opportunities for employment, including by establishing a Youth Enterprise Development Fund. Similar demographic dividend-related policy shifts and commitments to expand family planning, youth empowerment, education and employment are evident across a number of countries.

41. New displays of integrated data on the demographic dividend developed by UNFPA have also spurred significant interest from Governments. These include dashboards featuring projected age pyramids and the current status and trends of key dimensions of youth empowerment, education and employment (see dashboard examples highlighting disparate population age structure and child marriage in Namibia and the United Republic of Tanzania).

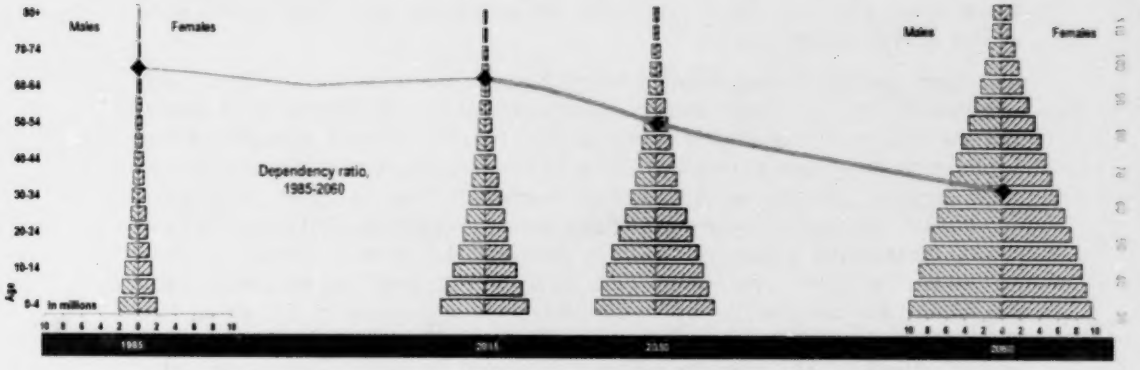
Figure I

Age structure and child marriage in Namibia and the United Republic of Tanzania

Namibia: age structure and total dependency ratio

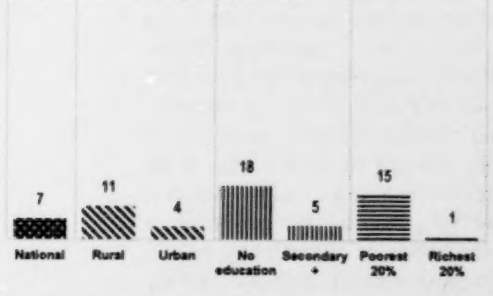


United Republic of Tanzania: age structure and total dependency ratio



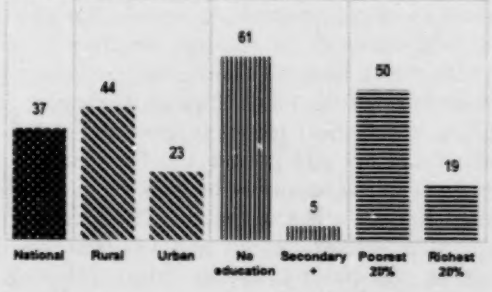
Namibia, Child marriage, 2013

Percentage of women 20-24 who got married before age 18, by residence, education and wealth index



United Republic of Tanzania, Child marriage, 2010

Percentage of women 20-24 who got married before age 18, by residence, education and wealth index



Data source: *World Population Prospects: The 2015 Revision: Key Findings and Advance Tables* (Demographic and Health Surveys).

42. Prospects for combining key variables of empowerment, education and employment into a "demographic dividend index" have been shared in a number of international meetings, again with high interest from key countries. A range of countries have requested national meetings on the demographic dividend in 2016 to share subnational integrated analyses and bring multiple ministries to the table for concrete and integrated policy work on the demographic dividend.

B. Data innovations for sexual and reproductive health

43. National and global support to strengthen health systems — a persistent need that warrants even greater attention — is being provided in parallel with a growing range of innovative stop-gap efforts to secure critical data on key preventable sexual and reproductive health outcomes and improve health-care services for young people.

44. **Maternal death surveillance and response.** UNFPA supports countries in implementing maternal death surveillance and response systems and improving the reporting of maternal deaths, the quality of data and the appropriate response. If target 3.1 of the Sustainable Development Goals (reduction of maternal mortality) is to be achieved, deaths need to be registered by cause of death so that patient management protocols can be reviewed and optimized and overall health-care service delivery can be improved.

45. Demographic data are essential for evaluating maternal death surveillance and response systems in that they enable a comparison of the expected maternal deaths and the number of reported maternal deaths. Niger is a good example of the implementation of such a system. In 2014, 31 per cent of expected maternal deaths were reported (facility-based maternal mortality), with a good geographic distribution. Although this rate is insufficient for an in-depth national analysis of the causes of maternal deaths in Niger, it positions the country among the best performers in Africa and South-East Asia with respect to maternal death surveillance and response. Further, maternal death disaggregation by age shows that 29 per cent of reported maternal deaths in facilities are among girls between the ages of 10 and 19. This provides evidence to support the need to discourage early, child and forced marriage and early pregnancy.

46. **Obstetric fistula.** The tragedy of obstetric fistula remains a major health and human rights challenge. For years, the global community has struggled to generate robust data on the burden of fistula. Such data are sorely needed for evidence-based planning and programming, to ensure that all survivors receive the care they need and help countries to measure progress in preventing and eliminating fistula. UNFPA, which leads the United Nations system's global Campaign to End Fistula in partnership with the Johns Hopkins Bloomberg School of Public Health, is currently piloting a statistical model to generate global and country-specific estimates of fistula incidence and prevalence. The model will be applied in 2016 to the more than 50 countries supported by the Campaign to End Fistula in order to produce new United Nations global estimates. These critical and long-needed data constitute a major step forward globally and a critical tool in the hands of countries to enable them to significantly advance their planning, implementation and monitoring efforts.

47. **Supporting community health workers with mobile applications.** In 2015, UNFPA hosted its first global hackathon in Uganda, in partnership with the Massachusetts Institute of Technology, where partners from 17 countries generated mobile health prototypes to promote adolescent sexual and reproductive health. The "GetIn" mobile application is a tool to be used by community health workers to map households where pregnant girls reside. Information captured during home visits is fed into a secure database, through which SMS message alerts are sent to health-care workers, young pregnant women and young mothers with health information and appointment reminders. A prototype of the application will be available in March 2016.

48. **Promoting better sexual and reproductive health-care services for young people.** In June 2015, loveLife South Africa, supported by the German Development Bank, launched a new mobile platform for young people, namely, iloveLife.mobi. This online mobile website serves as a hub for young people, providing them with information and helping them to access adolescent and youth-friendly services, thereby rewarding them directly with real-world incentives for health-seeking behaviour. As young people complete activities, such as taking an HIV test or adopting a family planning method, they earn points and enter competitions. Building on this platform, UNFPA South Africa and loveLife are augmenting the iloveLife.mobi with a widget that will include a health-care facility locator and rating system. Health-care providers then receive feedback on services they provide through a mobile platform, which gives them an opportunity to share valuable lessons and information. The georeferenced health system ratings will be used to strengthen clinical services for young people and will be integrated into a training programme for providers.

49. Lastly, demographic data play a critical role in the estimation of health resource needs. Global, national and subnational strategic planning, resource estimation and costing exercises seek to identify strategies to increase health coverage despite budget constraints and, in the context of the Sustainable Development Goals, ensure universal access to sexual and reproductive health. The Global Investment Framework for Women's and Children's Health has demonstrated how investments in women's and children's health result in high health, social and economic returns. This analysis used demographic projections and population dynamics related to family planning to examine the health system needs for scaling up coverage of maternal and newborn health, child health, immunization, family planning, HIV/AIDS, malaria and nutrition. The research concluded that increasing health expenditure by just $5 per person per year up to 2035 in 74 high-burden countries could yield up to nine times that value in economic and social benefits.[15]

C. National and subnational mapping of population data

50. The visual display of population data across space and time can have potent effects on the public understanding of demographic trajectories and of where citizens in a country are faring better or worse in different dimensions of health and development. As more census and survey data are now georeferenced, UNFPA has

[15] Karin Stenberg and others, "Advancing social and economic development by investing in women's and children's health: a new Global Investment Framework", *Lancet*, vol. 383, No. 9925 (April 2014).

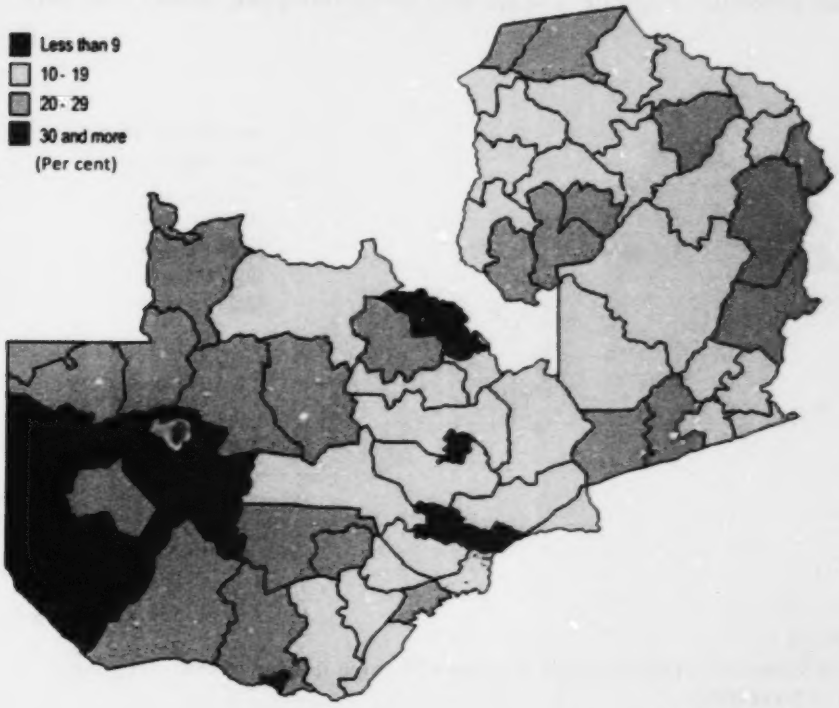
supported Governments in using a combination of those sources for small area mapping and small area estimation of critical indicators, including visual displays of data in dashboards that enable partners to extract simple but compelling figures and maps of population trends and needs at the national and subnational levels.

51. For example, efforts to support family planning in the Eastern European and Central Asian region have been strengthened by building the capacities of UNFPA country offices in data collection and utilization. In particular, a regional family planning dashboard institutionalized in 2015 serves as a dynamic and flexible mapping tool incorporating 25 different demographic, health and economic indicators. The database for all 17 Eastern European and Central Asian countries was populated from pre-agreed sources, with UNFPA supporting countries in reading and validating data from the demographic and health survey, the multiple indicator cluster survey and related sources. The consultative process was key to building capacity and ensuring ownership and national use of the output. The dashboard provides countries with a reliable, international-standard system for generating up-to-date data presentations that can be fully or partially exported into different platforms, including Word, Excel and Microsoft PowerPoint (see www.dataforall.org/dashboard/unfpa/family_planning/).

52. In several areas of interest relevant to the Framework of actions for the follow-up to the Programme of Action of the International Conference on Population and Development beyond 2014 and the 2030 Agenda, such mapping exercises have proved valuable in engaging Government leaders in recognizing and responding to population needs. For example, the UNFPA country office in Zambia has, with other partners, supported the development of a national strategy to end child marriage, using evidence gathered from a recent subnational analysis. In 2014, UNFPA provided hands-on training and technical backstopping to the Central Statistical Office for analysis of the 2010 population and housing census. The resulting theme-based and area-specific maps (at the national, provincial, district, constituency and ward levels) revealed areas with a high incidence of forced and early/child marriages, as well as correlated socioeconomic factors. The map below illustrates districts where a comparatively high proportion of girls experience a combination of known risk factors for child marriage (see figure II). The policy and programme-relevant evidence provided impetus to the Government and partners to scale up the national campaign to end child marriage. The skills transferred to the Central Statistical Office continue to be evident in subsequent analysis of the 2014 demographic and health survey.

Figure II
Zambia: Girls at risk of child marriage

Percentage of never-married girls aged 10 to 17 living with neither parent or with their mother only, from the poorest 40 per cent of households, 2010 Zambia population census



53. **Small area estimation.** One of the challenges of using data to ensure that family planning services, including commodity flows and providers, are available to populations in greatest need is the estimation of key family planning indicators at low administrative levels. Most of the data used for family planning analysis in the developing world are collected through household surveys, but sample limitations allow only for data disaggregation at the regional level and, in a few cases, at the provincial/state level. Where both census and demographic and health survey data are available, UNFPA generates small area estimations through regression models to estimate family planning indicators at the district and municipality levels, including the contraceptive prevalence rate, the rate of unmet need for contraception and the proportion of demand satisfied.

54. The resulting small area estimation maps for Nepal are shown in figures III and IV below. Figure III provides the 2015 district-level estimates of the rate of unmet need for contraception and figure IV provides the absolute number of women in need of contraception. Depending on the indicator chosen, different districts are highlighted, allowing policymakers to direct interventions to locations where the highest number of women may be in need or to districts where smaller absolute numbers of women are living but where a higher proportion are in need of family

planning services. Small area estimation methods are used by UNFPA for a wide range of other subnational analyses, including mapping integrated population vulnerabilities in health, reproductive rights and climate hazards, for which high resolution data are essential for targeted programming.

Figure III
Nepal: Estimates of the rate of unmet need for contraception, district level, 2015

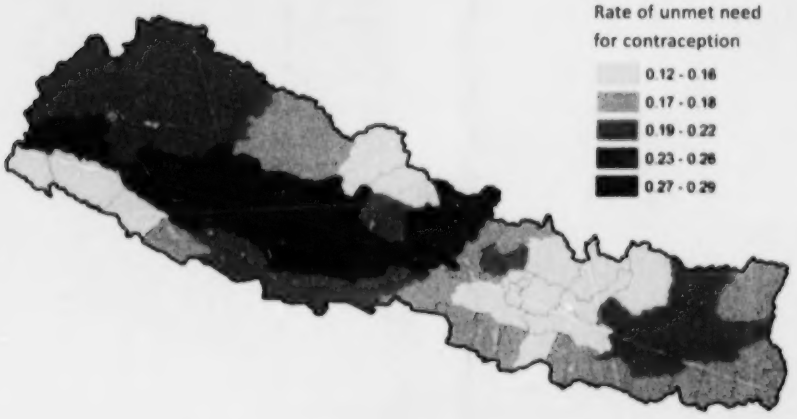
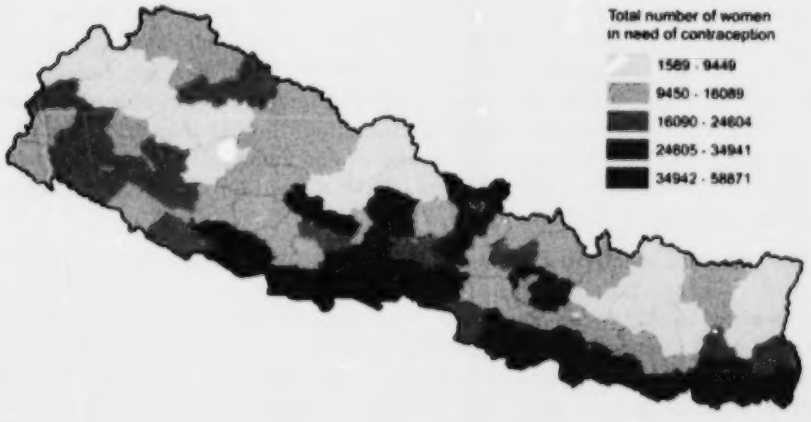


Figure IV
Nepal: Estimates of the absolute number of women in need of contraception, district level, 2015



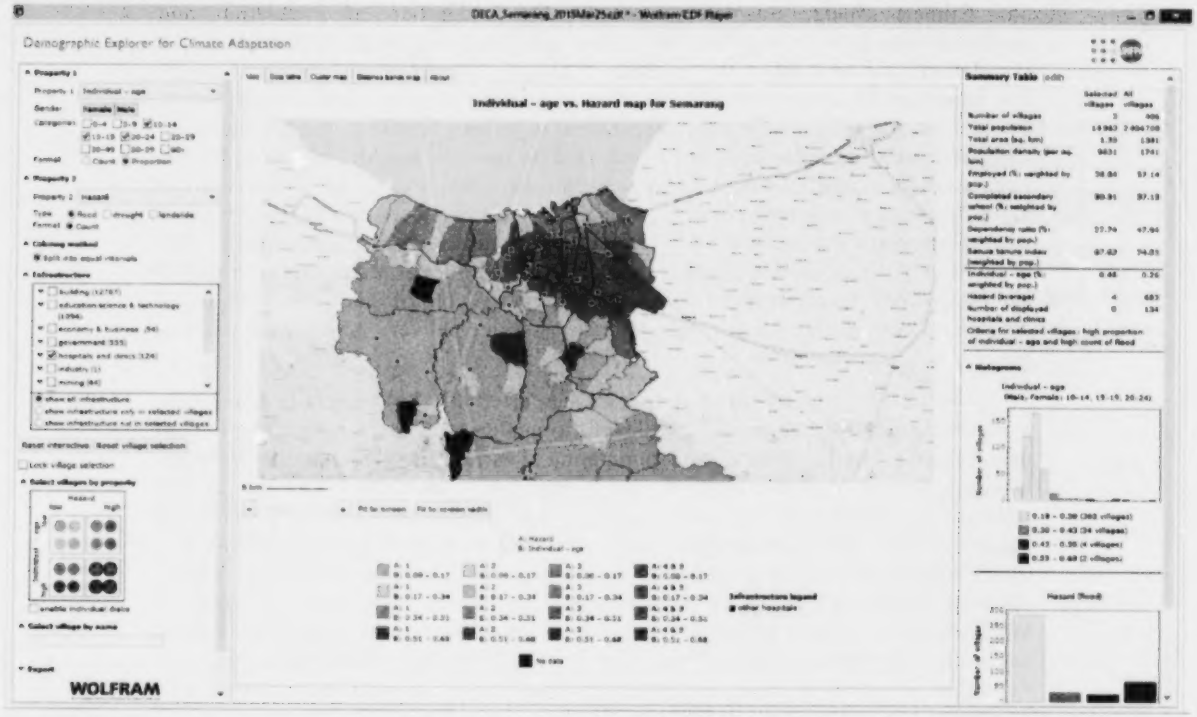
D. Persons vulnerable to climate change

55. Climate change adaptation requires the integration of population and environmental data through the use of the spatial data systems described above. Population vulnerability to climate change encompasses the immediate consequences of environmentally related crises, but also the gradual erosion of livelihoods and related consequences, including poverty, conflict and/or migration. Climate-related hazards, both acute and chronic, are geographic in nature; hence, population vulnerability data need to be examined at lower geographic levels, given the differences in environmental threats across small distances. UNFPA has worked with Indonesia, Jamaica, Malawi, Maldives, and Saint Lucia, using population data to improve policies on climate change adaptation, with a particular focus on people and households. Georeferenced census data are at the core of this work, with added data on environmental hazards, infrastructure, service delivery points, land use and poverty.

56. The UNFPA country office in Bolivia supported the Government in developing a similar study, at the municipal level, to understand the socioeconomic and demographic determinants of the population's vulnerability to natural disasters. Using Bayesian factorial analysis, the methodology combined qualitative data relating to perception of vulnerability and uncertainty with census-based socioeconomic and demographic data. The resulting methodology allows the identification of a regional vulnerability index as well as the contributing factors, allowing the prioritization of risk-prevention initiatives and the localization of humanitarian response. Maps and results are already integrated within the official territorial information system. These new population analyses can help to minimize the threat of natural disasters and to concentrate humanitarian aid in the event of a disaster.

57. In general, capacity in geographic information systems (GIS) is limited in many contexts, especially at the subnational level, and spatial analysis is time-consuming. The "Demographic Explorer for Climate Adaptation" model, which was developed as part of the work of UNFPA with Indonesia and Malawi, is an automated spatial analysis tool designed to bridge such capacity gaps and help policymakers to generate useable analysis quickly (see figure V below, which shows young people in flood risk areas in Semarang, Indonesia, coupled with a wide range of descriptive statistics). The use of the Demographic Explorer for Climate Adaptation is currently expanding to Jamaica and Saint Lucia.

Figure V
Demographic Explorer for Climate Adaptation: Semarang, Indonesia, young people in flood risk areas



E. Population data innovations in unstable circumstances

58. Instability and insecurity are on the rise[16] in ways that are incredibly challenging for traditional data systems to address. In such settings, it may be impossible to collect new census information and available data may quickly be outdated if instability leads to mass movements of people. Surveys may exclude certain zones of a country and the population situation may be changing too quickly to rely solely on infrequently collected data sources. As a result, there is growing enthusiasm for innovations around big data to provide real-time estimations of the number and locations of people. Big data reflect the explosion in the quantity and diversity of high-frequency digital data, including call logs, mobile-banking transactions, online user-generated content such as blog posts and Tweets, online searches and satellite images. In 2015, UNFPA hosted a "big data bootcamp" bringing together UNFPA data specialists, the private sector, United Nations agencies and global big data experts. Among the key results has been an increase in partnerships with organizations combining a wide range of data, including traditional, satellite and big data.

[16] See Office of the United Nations High Commissioner for Refugees, "Global Trends: Forced Displacement in 2014", available from http://unhcr.org/556725e69.html.

59. One country where such innovative data have been applied in unstable circumstances is Afghanistan. The last census of Afghanistan was done in 1979, and security concerns have prevented a more recent one. The Government of Afghanistan requested the help of the United Nations in estimating the population. Building on the big data Bootcamp, UNFPA provided technical support in collaboration with Flowminder, an organization that collects, aggregates, integrates and analyses anonymous mobile operator data, satellite data and household survey data. Analyses by Flowminder have already enabled the mapping of the distribution and characteristics of vulnerable populations in a wide range of countries, starting with the post-earthquake population in Haiti a decade ago. UNFPA and Flowminder are collaborating in Afghanistan to generate maps of the population using an ongoing sociodemographic survey, satellite imagery, other remote sensing data, urban data and GIS statistical modelling.

60. In Latin America and the Caribbean, UNFPA is building a mobile-ready web-based and georeferenced application, which will be available to United Nations agencies and partners to gather and deploy sociodemographic data in real time during humanitarian crises; the project is also serving to develop national capacities to better produce and use population data for humanitarian response. The system merges the online indicator calculator "Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations" and the *Guidelines for the Collection and Analysis of Socio-demographic Data in Humanitarian Crisis Situations in Latin America and the Caribbean*.[17] The application will utilize a database that represents a consolidation of information at the national level and the most local level available.

61. In humanitarian crises, responders in the field can use a phone application to quickly select a particular geographic area on a map through a simple finger touch and immediately receive population data estimates for that geographic area, allowing a rapid estimation of the number of persons affected, which can be critical for planning and resource distribution. Using mobile devices, users can also upload pictures with geographic coordinates as evidence-based references for a timely response in key locations and to guide deliveries. Stakeholders from 10 countries are currently validating and finalizing the application for deployment.

IV. The way forward: strengthening national data ecosystems

62. The challenge of strengthening national statistical systems has been recognized within the context of targets 17.18 and 17.19 of the Sustainable Development Goals, but the scope and complexity of needed investments will be difficult to capture within a few key indicators. Moreover, the challenges faced by countries differ and should be addressed in a differentiated way.

63. It will nevertheless be critical for all countries to raise the political priority of national population data ecosystems, develop national monitoring agendas for the implementation of the Programme of Action of the International Conference on Population and Development and the Sustainable Development Goals and address the challenge of identifying people who are most in need of development

[17] At the request of country offices in Latin America and the Caribbean, the *2010 Guidelines on Data Issues in Humanitarian Crisis Situation* were adapted to the regional context in 2014.

interventions owing to social, economic, environmental, cultural or spatial exclusion. For some countries, an initial capacity assessment and the development of a national population statistics plan and/or related legislation may be warranted, under the scope of the capacities required for target 17.18 of the Goals.

64. Achieving the desired level of national statistical capacity by 2020 will also require financial mechanisms that progressively increase national investments in data and prioritize long-term growth of institutional capacities for generation and use of the census, civil registration and vital statistics, administrative records and new sources of data. Greater availability and use of geospatial data will be essential for locating those in need, and the building of robust administrative data that are accessible to decision makers will allow countries to receive rapid feedback on whether interventions are working or not and where emerging needs warrant attention. The growing demand for higher education across the world speaks to the opportunity for training a next generation of population experts, ideally with the integrated, human-rights-based vision of development crafted within the Programme of Action of the International Conference on Population and Development and the 2030 Agenda.

65. A new strategy that will increase national capacity for the use of census data is needed for the 2020 census round. This strategy should be centred within a broader package of regional and South-South centres of excellence that not only promote partnerships for the affordable generation, dissemination and analysis of census data in all countries, but provide greater support to the strengthening of national capacities for the use of census and all related population data by national statistical offices, academics and civil society.

66. Lastly, building a knowledge society and ensuring the informed use of reliable population and development data by citizens and their Governments must be the ultimate goal of future investments. Discussions on the data revolution in the course of 2015 have understandably focused on the monitoring of and reporting on the achievement of the Sustainable Development Goals, given the endorsement of this ambitious and potentially transformative agenda. The emphasis on strengthening demographic data in the coming 5 to 15 years must be directed towards the enhancement of the national data ecosystems and institutions that will provide longer-term value for development. All countries will collate and provide Sustainable Development Goal indicators for global frameworks; yet, the greater aim should be that all countries have the capacity to summarize and use such national data and to share that data with the public, for their collective development.

67. The emphasis on national ownership of data is critical to the way forward, for it underscores the importance of not only supporting countries in generating data to be used and analysed by others, but ensuring that the definition of national success includes the establishment of a vibrant sector of data professionals, within national statistical offices, academia and civil society, who have been trained through strong national institutions, regional centres of excellence and public-private partnerships and can use population data to monitor progress, identify gaps and shortfalls and advance the goals of dignity and human rights, equality, good governance and the protection of the environment, which are central to the fulfilment of the Programme of Action of the International Conference on Population and Development and the Sustainable Development Goals.